

Appl. No. : 10/719,501
Filed : November 21, 2003

AMENDMENTS TO THE CLAIMS

Please cancel Claim 30.

Please amend Claims 1, 15-20, and 27 as indicated below.

1. (Currently amended) A method of fabricating an inductor comprising:
forming a plurality of vias in a substrate;
forming a magnetic core within the substrate;
depositing a first metallic ~~conductive~~ material into the vias to form a plurality of metallic ~~conductive~~ posts; and
fabricating a plurality of conductive segments that interconnect the plurality of metallic ~~conductive~~ posts to form a conductive coil surrounding the magnetic core.
2. (Original) The method of Claim 1, wherein forming the plurality of vias comprises extending the vias entirely through the substrate.
3. (Original) The method of Claim 1, wherein forming the plurality of vias comprises forming two substantially parallel rows of vias extending through the substrate.
4. (Original) The method of Claim 1, wherein forming the plurality of vias comprises using an etching process.
5. (Original) The method of Claim 1, wherein forming the plurality of vias comprises using a laser.
6. (Original) The method of Claim 1, wherein the substrate comprises a semiconductor wafer.
7. (Original) The method of Claim 1, wherein the substrate comprises silicon.
8. (Original) The method of Claim 1, wherein the substrate comprises silicon carbide.
9. (Original) The method of Claim 1, wherein the substrate comprises germanium.
10. (Original) The method of Claim 1, wherein forming the magnetic core comprises depositing a magnetic oxide.
11. (Original) The method of Claim 1, wherein forming the magnetic core comprises depositing ferromagnetic material by chemical vapor deposition.
12. (Original) The method of Claim 1, wherein forming a magnetic core comprises:
forming a porous region in the substrate; and

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depositing a ferromagnetic material in the porous region.

13. (Original) The method of Claim 1, wherein forming the conductive coil comprises depositing copper.

14. (Original) The method of Claim 1, wherein forming the conductive coil comprises depositing gold.

15. (Currently amended) The method of Claim 1, wherein fabricating the plurality of conductive segments comprises forming a plurality of conductive straps interconnecting the metallic ~~conductive~~ posts to form the conductive coil.

16. (Currently amended) The method of Claim 15, wherein forming the plurality of conductive straps comprises using a second metallic ~~conductive~~ material, wherein the first metallic ~~conductive~~ material is not the same as the second metallic ~~conductive~~ material.

17. (Currently amended) The method of Claim 15, wherein the metallic ~~conductive~~ posts are configured in two substantially parallel rows.

18. (Currently amended) The method of Claim 1, wherein the substrate has at least two substantially parallel surfaces, and wherein the metallic ~~conductive~~ posts are substantially perpendicular to the parallel surfaces.

19. (Currently amended) The method of Claim 1, wherein the metallic ~~conductive~~ posts have circular cross-sections.

20. (Currently amended) The method of Claim 1, wherein the metallic ~~conductive~~ posts are at least partially surrounded by an insulating material.

21. (Original) The method of Claim 20, wherein the insulating material comprises polyimide.

22. (Original) The method of Claim 1, wherein the inductor has an inductance of at least 1 nanohenry.

23. (Original) The method of Claim 1, further comprising covering the conductive coil with a passivation layer.

24. (Original) The method of Claim 23, wherein the passivation layer is configured to electrically insulate the inductor and to protect the inductor from physical damage.

25. (Original) The method of Claim 1, further comprising operatively coupling the inductor to an integrated circuit formed on the substrate.

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26. (Original) The method of Claim 25, wherein the integrated circuit is a computer memory circuit.

27. (Currently amended) An inductor comprising:

a substrate;

a magnetic core formed within the substrate;

a plurality of vias filled with a metallic ~~conductive~~ material providing a plurality of metallic ~~conductive~~ posts ~~paths~~ through the substrate; and

a plurality of conductive segments interconnecting the plurality of conductive posts ~~paths~~ to form a conductive coil surrounding the magnetic core.

28. (Original) The inductor of Claim 27, wherein the substrate comprises a semiconductor wafer.

29. (Original) The inductor of Claim 27, wherein the substrate comprises silicon.

30. (Cancelled)

31. (Original) The inductor of Claim 27, wherein the magnetic core comprises a porous region of the substrate treated with a ferromagnetic material.

Please add new Claim 32 as indicated below.

32. (New) The inductor of Claim 27, wherein the metallic material in the vias comprises copper.